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ORIGINAL ARTICLE

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Subgroups of Dutch homeless young adults based on risk- and protective factors for quality of life: Results of a latent class analysis

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Abstract

It is important to gain more insight into specific subgroups of homeless young adults (HYA) to enable the development of tailored interventions that adequately meet their diverse needs and to improve their quality of life. Within a heterogeneous sample of HYA, we investigated whether subgroups are distinguishable based on risk- and protective factors for quality of life. In addition, differences between subgroups were examined regarding the socio-demographic characteristics, the use of cognitive coping strategies and quality of life. A total of 393 HYA using shelter facilities in the Netherlands were approached to participate, between December 2011 and March 2013. Structured face-to-face interviews were administered approximately 2 weeks after shelter admission by trained research assistants. A latent class analysis was conducted to empirically distinguish 251 HYA in subgroups based on common risk factors (former abuse, victimisation, psychological symptoms and substance use) and protective factors (resilience, family and social support and perceived health status). Additional analysis of variance and chi-square tests were used to compare subgroups on socio-demographic characteristics, the use of cognitive coping strategies and quality of life. The latent class analysis yielded four highly interpretable subgroups: the at-risk subgroup, the high-risk and least protected subgroup, the low-risk subgroup and the higher functioning and protected subgroup. Subgroups of HYA with lower scores in risk factors showed higher scores in protective factors, the adaptive cognitive coping strategies and quality of life. Our findings confirm the need for targeted and tailored interventions for specific subgroups of HYA. Social workers need to be attentive to the pattern of risk- and protective factors in each individual to determine which risk factors are prominent and need to be targeted and which protective factors need to be enhanced to improve the quality of life of HYA.

KEYWORDS

coping strategies, homeless young adults, protective factors, quality of life, risk factors, subgroups

1 | INTRODUCTION

Homeless young adults (HYA) are extremely vulnerable in many respects as they face personal, social and financial hardships in life and they regularly have limited resources to participate in society (Edidin, Ganim, Hunter, & Karnik, 2012; Ferguson, Jun, Bender, Thompson, & Pollio, 2010). Given the heterogeneity of HYA in their characteristics, problems and needs, it is a challenge to address their needs adequately (Edidin et al., 2012; Ferguson et al., 2010). Overall, there is little evidence for the effectiveness of general interventions for HYA (Altena, Brilleslijper-Kater, & Wolf, 2010) and their specific needs seem not always to be sufficiently addressed (Ha, Narendorf, Santa Maria, & Bezette-Flores, 2015; Hudson, Nyamathi, & Sweat, 2008). To serve this population well, it is important to gain more insight into specific subgroups of HYA to enable the development of tailored interventions that adequately meet the needs of these subgroups (Hudson et al., 2008; Milburn et al., 2009). As quality of life is an important key principle guiding interventions targeting HYA and is perceived as an important indicator for well-being, this concept should be the focal point when studying subgroups (Johnson & Pleace, 2016; Kozloff et al., 2016; Krabbenborg et al., 2015; Patterson et al., 2013; van Straaten, 2016).

In this study, we will examine whether subgroups of HYA based on common risk factors (former abuse, victimisation, psychological symptoms and substance use) and relevant protective factors (resilience, family and social support, and perceived health status) in relation to quality of life can be identified within a heterogeneous HYA population upon entry to shelter facilities in the Netherlands. In addition, we will investigate whether subgroups differ in socio-demographic characteristics, the use of cognitive coping strategies and quality of life.

1.1 | Risk factors

Preceding and during homelessness, young adults are confronted with many risks that affect their ability to gain control over their challenging life situation and their well-being (Coates & McKenzie-Mohr, 2010; Edidin et al., 2012). HYA have often escaped from or been forced to leave unsafe dysfunctional or abusive (physical, emotional and sexual) family situations (Edidin et al., 2012; Embleton, Lee, Gunn, Ayuku, & Braitstein, 2016). While homeless, they are again exposed to a range of stressful situations and harms, which includes the increased likelihood of (re)victimisation as well as the involvement in high-risk behaviours. Substance use is, for example, highly prevalent among homeless youth (70%–90%) (Edidin et al., 2012; Thompson, Bender, Windsor, Cook, & Williams, 2010), with alcohol, tobacco and marijuana reported as the most commonly used substances (Barendregt, Schrijvers, Baars, & van de Mheen, 2011; Edidin et al., 2012; Thompson et al., 2010). HYA often experience psychological health problems (Edidin et al., 2012; Thompson et al., 2010). Particularly, depressive disorders (12%–41% have major depressive disorders) and anxiety disorders, including posttraumatic stress disorders (one quarter to one-third) are common (Bender, Brown, Thompson,

What is known about this topic

- Homeless young adults (HYA) comprise a heterogeneous population, characterised by their differential experiences, problems and needs, which complicates addressing their needs adequately.
- The accumulation of protective factors is essential for well-being in HYA populations.

What this paper adds

- HYA are empirically distinguishable in four highly interpretable subgroups based on their risk- and protective factors for quality of life.
- Subgroups with high scores in protective factors seem to be less vulnerable, confirming that the accumulation of protective factors is important in preserving quality of life.
- The balance between risk- and protective factors and the use of combined forms of adaptive cognitive coping strategies seem to be important for the quality of life of HYA.

Ferguson, & Langenderfer, 2015; Bender, Thompson, Ferguson, Yoder, & Kern, 2014; Busen & Engebretson, 2008; Rohde, Noell, Ochs, & Seeley, 2001; Whitbeck, Hoyt, Johnson, & Chen, 2007). Finally, many somatic (chronic) symptoms are reported such as head-, back-, and stomach aches, and teeth problems (Barendregt et al., 2011; Wolf, Altena, Christians, & Beijersbergen, 2010).

1.2 | Protective factors

Protective factors are considered as positive counterparts to vulnerability as they may help to reduce the effect of risk factors and stressors by helping people to deal adequately with negative life events (Werner & Smith, 1992). Research showed that youth who had been exposed to stressful life events in their childhood were able to adapt to their environment in their transition to adulthood (Werner & Smith, 1992). The accumulation of protective factors contributes to resilience, which has been described as the ability to successfully cope with risk factors or stressors, to adapt to a changing environment, and to adequately mobilise personal and social resources to buffer against adverse health outcomes (Rew & Horner, 2003). Protective factors such as, personal strengths and resources, social support, self-esteem, optimism, overall health and adaptive coping were indicated as essential factors for well-being in HYA populations (Kidd & Shahar, 2008; Lightfoot, Stein, Tevendale, & Preston, 2011; Lindsey, Kurtz, Jarvis, Williams, & Nackerud, 2000; Milburn et al., 2009; Thompson et al., 2016). Cognitive coping strategies play an important role in dealing with the demands of challenging life circumstances and thereby affecting quality of life and well-being (Extremiera & Rey, 2014; Garnefski, Koopman, Kraaij, & ten Cate, 2009; Garnefski, Legerstee, Kraaij, Van Den Kommer, & Teerds, 2002; Lazarus & Folkman, 1984; Li

et al., 2015): they even seem to have a buffering effect (Altena, Boersma, Beijersbergen, & Wolf, n.d.; Kraaij et al., 2003). The use of cognitive coping strategies in response to stressful life situations appears to be highly variable among young people (Garnefski et al., 2002) and has not been previously investigated among HYA.

1.3 | Typologies of homeless young people

In HYA populations, research has led to important insights into meaningful subgroups of HYA (Toro, Lesperance, & Braciszewski, 2011). Some studies classify HYA by using predefined categories, which referred to reasons for homelessness (e.g. family conflict) and housing status, such as runaways, throwaways, street youth, couch surfers and shelter-based youth (Jones, 1988; Roberts, 1982; Zide & Cherry, 1992). Quantitative studies go a step further in providing empirical evidence for classifications of homeless young people. Such typologies of HYA, similar to homeless people in general (Humphreys & Rosenheck, 1995; Kuhn & Culhane, 1998; Morse, Calsyn, & Burger, 1992; Tsai, Edens, & Rosenheck, 2011; Tsai, Kaspro, & Rosenheck, 2013), are often based on housing status (Tierney, Gupton, & Hallett, 2008), reasons for homelessness (Cherry, 1993; Heinze, Jozefowicz, Toro, & Blue, 2012), family background (Benjaminsen, 2016), service utilisation (Kort-Butler & Tyler, 2012), and risk factors (or risk practices) associated with homelessness and well-being, such as psychological problems, substance use and victimisation experiences (Adlaf & Zdanowicz, 1999; Bender, Ferguson, Thompson, & Langenderfer, 2014; Bucher, 2008; Mallett, Rosenthal, Myers, Milburn, & Rotheram-Borus, 2004; Milburn et al., 2009). Some studies also included protective factors for healthy development, such as having supportive friends, being employed or going to school to categorise HYA (Mallett et al., 2004; Milburn et al., 2009; Zide & Cherry, 1992). In two studies, both risk- and protective factors were entered simultaneously in the analysis. Milburn et al. (2009) identified three subgroups of newly homeless youth: the protected cluster, youth with more protective factors than risk factors who do relatively well; the at-risk cluster, youth with at least one protective factor and the at-risk cluster, youth with more risk than protective factors. Mallett et al. (2004) identified a four-cluster typology based on the daily routines of homeless youth that is how (e.g. sex work, use substances), where (e.g. at friend's places, at services) and with whom (e.g. friends, family) they spent their time. Also in this typology, it was found that youth in some subgroups showed a pattern of engagement in more harmful practices in combination with less harmless practices and vice versa.

1.4 | Research questions

This study aimed to extend previous work on typologies of homeless young people. A greater understanding of the (im)balance between risk- and protective factors in subgroups within a population of HYA as well as the use of cognitive coping strategies and the quality of life in these subgroups, could lead to the development or adaptation of services and interventions for HYA. Two research questions were

addressed: (i) Which subgroups of HYA, on the basis of risk factors and protective factors, can be identified in a population of HYA upon entry to shelter facilities in the Netherlands? and (ii) To what extent, do these subgroups differ on gender and age, the use of cognitive coping strategies and quality of life? We expected that subgroups with lower scores in risk factors and higher scores in protective factors use more of the so-called adaptive cognitive coping strategies and report higher scores in quality of life (Doron, Thomas-Ollivier, Vachon, & Fortes-Bourbousson, 2013).

2 | METHODS

2.1 | Participants and procedure

For this study, baseline data were used pertaining to 251 HYA participating in a study on the effectiveness of a strength-based method, called "Houvast" (Dutch for "grip") (Krabbenborg, Boersma, & Wolf, 2013). The study was approved by an accredited Medical Review Ethics Committee region Arnhem-Nijmegen (registration number 2011/260).

To be eligible to participate, shelter facilities had to meet the following inclusion criteria: (i) delivering ambulant and/or residential care to HYA; (ii) providing care to at least 15–20 HYA per year and (iii) providing care for an average period of at least 3 months consecutively (Krabbenborg et al., 2013). Ten of the 35 invited shelter facilities decided to participate. Reasons for not participating were implementation of other methods, financial restrictions, internal reorganisations or involvement in other studies. Included HYA met the following criteria: (i) not living with their parents while receiving care; and (ii) required care for more than 2 weeks. Professionals in the shelter facilities registered all HYA at shelter admission and invited them to participate in the study when eligible.

Of the 393 young adults who were approached, 142 (36.1%) were not interviewed for the following reasons: (i) they had already left the shelter facility before an interview appointment was made (14%); (ii) no interest (10%); (iii) they would rather spend time on other activities, such as spending time with friends (5%) and (iv) unknown reasons (50%). Four young adults were excluded from the analysis because they were younger than 18 years, so our final sample consisted of 251 HYA. Participating young adults were assured of confidentiality and signed informed consent. Structured face-to-face interviews were administered approximately 2 weeks after shelter admission by trained research assistants who had experience or affinity with working with vulnerable people. Participants received €10 for completing the interview. The interviews were held between December 2011 and March 2013. For more details, see Wolf (2012) and Krabbenborg et al. (2013). Of the participating 251 HYA, 68% are male and 32% are female with an average age of 20 years ($SD = 1.73$). About half of the group (49%) were from a non-Dutch background (predominantly Surinamese, Moroccan, Netherlands Antilles) (Keij, 2000). One-third of the group (32%) completed elementary school or had no education, 43% completed lower general secondary education, and approximately one quarter

(24%) completed intermediate vocational education, senior general secondary education or pre-university education. Forty-seven per cent of the HYA was homeless for 6 months or longer.

2.2 | Survey measures and instruments

2.2.1 | Risk factors

Abuse

HYA were asked whether physical, emotional and/or sexual abuse in their family of origin contributed to their homelessness (yes/no).

Victimisation

One question of the Brief Dutch version of Lehman Quality of Life Interview (QOLI) was used to measure victimisation (Lehman, 1983, 1995; Lehman, Slaughter, & Myers, 1992; Wolf, 2007; Wolf et al., 2002), namely "Were you a victim of a violent offence (e.g. molestation, rape) the year prior the interview?". The brief QOLI was used in previous studies among homeless people and demonstrated good psychometric properties (Lehman, Dixon, Kernan, DeForge, & Postrado, 1997; Wolf, Burnam, Koegel, Sullivan, & Morton, 2001).

Symptoms of somatisation, depression and anxiety

With the Brief Symptom Inventory-53 (BSI-53), we assessed symptoms of somatisation, depression and anxiety (De Beurs & Zitman, 2005; Derogatis, 1993). Each subscale consists of six or seven items, measured on a 5-point Likert scale from 0 (not at all) to 4 (extremely). The BSI has been widely used in research among homeless youths and adults (Ball, Cobb-Richardson, Connolly, Bujosa, & O'Neill, 2005; Slesnick, Kang, Bonomi, & Prestopnik, 2008). Reliability and validity of the Dutch BSI are good (De Beurs & Zitman, 2005). In this study, the Cronbach's α of the subscales ranged from 0.76 to 0.85. Participants were divided into two groups: HYA with normal scores in comparison with the general population (18–29 years old) and HYA with a score in the upper 40th percentile of the general population (De Beurs, 2011).

Substance use

The frequency of alcohol and soft drug use was measured with the Dutch version of the European Addiction Severity Index, which has been proven valid and reliable (EuropASI) (Kokkevi et al., 1993; McLellan et al., 1992). We asked participants whether they used five or more glasses alcohol at least once a week (yes/no) and whether they used cannabis on an almost daily basis during the past 30 days (yes/no).

2.2.2 | Protective factors

Resilience

Resilience was measured with the Dutch Resilience scale (RS-NL) (Portzky, Wagnild, De Bacquer, & Audenaert, 2010; Wagnild & Young, 1993). The 25-items were measured on a 4-point Likert scale, ranging from 1 (strongly disagree) to 4 (strongly agree). Examples of items are: "I am able to manage myself more than

anyone else," "My belief in myself gets me through hard times." The average scores on the items were used to indicate resilience with lower scores reflecting lower levels of resilience. The RS-NL has been proven valid and reliable (Portzky, Audenaert, & De Bacquer, 2009; Portzky et al., 2010). In our study, the Cronbach's alpha of the scale was 0.88.

Perceived support and perceived health status

The QOLI was used to measure perceived family and social support and perceived health (Lehman, 1983, 1995; Lehman et al., 1992; Wolf et al., 2002). Participants were asked to rate their responses on a 7-point Likert scale ranging from 1 (terrible) to 7 (delighted). The subscales family support and social support include a set of two and three variables, respectively. For example, "How do you feel about the way things are in general between you and your family?" and "How do you feel about the people you see socially?". Cronbach's α of the two scales were 0.86 and 0.70, respectively.

Three items were used to measure perceived health status (e.g. "How do you feel about your health in general?"). Cronbach's alpha of this scale was 0.67.

Cognitive coping

The short version of the Cognitive Emotion Regulation Questionnaire (CERQ) was used to assess cognitive coping strategies after having experienced stressful life events (Garnefski & Kraaij, 2006). The CERQ consists of nine subscales with two items each: self-blame (thoughts of blaming yourself for what happened), other-blame (thoughts of blaming others for what happened to you), rumination (thinking of feelings/thoughts associated with the negative event), catastrophising (recurring thoughts about the terror of an experience), positive refocusing (thinking about pleasant things instead of the negative event), refocus on planning (thinking about the steps to take and how to cope with the event), positive reappraisal (assigning a positive meaning to the negative event in terms of personal growth), putting into perspective (emphasising the relativity of an event compared to other events) and acceptance (accept and resign oneself to what you have experienced) (Garnefski, Kraaij, & Spinhoven, 2001). Items were scored on a 5-point Likert scale ranging from 1 (almost never) to 5 (almost always). Scores were summarised to obtain a total subscale score with higher scores indicating more use of a specific cognitive strategy. Reliability and validity of the scales of the CERQ were good (Garnefski & Kraaij, 2006; Garnefski et al., 2001). In this study, Cronbach's alphas varied from 0.63 to 0.83.

Quality of life

General quality of life was measured by the QOLI (Lehman, 1983, 1995; Lehman et al., 1992; Wolf et al., 2002) using the same question at the beginning and at the end of the interview, namely "How do you feel about your life in general?". Answers could range from 1 (terrible) to 7 (delighted). Cronbach's alpha of these two items was 0.74.

2.3 | Analysis plan

To identify subgroups in a population of HYA at entry upon Dutch shelter facilities, a latent class analysis (LCA) was conducted using Latent GOLD 4.0 (Vermunt & Magidson, 2005). LCA is a model-based cluster analysis method for identifying homogeneous subgroups which differ on the variables used as input for the clustering method (Vermunt & Magidson, 2005). After deciding on the number of clusters, the probability of belonging to a cluster can be calculated for each individual (Magidson & Vermunt, 2004; Vermunt & Magidson, 2005). Unrestricted models with 1–10 clusters were examined in order to determine an optimal number of classes that best represented the data. Criteria for model-fit included: the Bayesian information criterion (BIC), the Akaike information criterion (AIC) and the modified AIC (AIC3). The lower the values of these fit indices, the better the model represents the data (Magidson & Vermunt, 2004). In addition, the most parsimonious cluster solution that reflected meaningful patterns relevant for practice was chosen. Variables that did not significantly differentiate among clusters ($\alpha < 0.05$) were excluded from the LCA.

We performed analysis of variance or chi-square tests using IBM SPSS Statistics (version 20) to compare subgroups on socio-demographic characteristics, the use of cognitive coping strategies and quality of life. Bonferroni adjustment (to $p < .008$) was applied because we performed six pairwise comparisons.

3 | RESULTS

3.1 | LCA solution: four class model

Initially, 12 variables were included in the LCA. However, as substance use did not significantly differentiate between clusters, these variables were excluded from the analyses.

Table 1 presents the fit indices used for the latent class models with 1–10 clusters. According to the BIC, a two-cluster model was most appropriate, whereas a nine-cluster model appeared to be

the best according to the AIC, and a four-cluster model according to AIC3. Simulation studies have shown that BIC has the tendency to underestimate the number of clusters, especially with small samples, whereas AIC is more likely to overestimate the number of clusters (Andrews & Currim, 2003; Dias, 2004; Lukociene, Varriale, & Vermunt, 2010). Because the AIC3 has the highest overall success rates and the four-cluster solution yielded four highly interpretable subgroups, we decided that the four-cluster solution best presented our data.

3.2 | Cluster characteristics

The first cluster of HYA (see Table 2) was named the *at-risk subgroup* ($n = 114$; 45%). In this subgroup, HYA reported abuse as an important reason for leaving their family home. Many reported above-average levels of psychological symptoms, including somatisation, depression and anxiety. They showed relatively high scores on resilience and were moderately satisfied with their social support and health status. They scored relatively low in family support.

The second cluster was characterised as the *high-risk and least protected subgroup* ($n = 60$; 24%). Many HYA reported to have risk factors and less protective factors. Prominent were the above-average levels of psychological symptoms and HYA victimisation experiences.

In cluster three ($n = 42$; 17%), the *low-risk subgroup*, none of the HYA reported abuse as a reason for leaving home and relatively a few reported victimisation experiences. A substantial part of the HYA reported above-average levels of somatic and anxiety symptoms, but a few reported above-average levels of depressive symptoms. The scores on protective factors were relatively high.

The final cluster, the *higher functioning and protected subgroup* ($n = 35$; 14%), showed the highest scores on resilience and perceived health status, and relatively few reported victimisation experiences. However, many HYA reported former abuse as a reason for leaving home. None of the HYA reported above-average levels of depressive symptoms and a few reported above-average levels of somatic symptoms. Above-average levels of anxiety were reported but less compared

TABLE 1 Analysis of model selection for 1 to 10 latent class models

	LL	BIC (LL)	AIC (LL)	AIC3 (LL)	Npar	Class. Err.
Cluster 1	-2,186.41	4,444.65	4,398.82	4,411.82	13	0.00
Cluster 2	-2,000.28	4,149.75	4,054.56	4,081.56	27	0.06
Cluster 3	-1,971.01	4,168.57	4,024.02	4,065.02	41	0.13
Cluster 4	-1,936.02	4,175.95	3,982.05	4,037.05	55	0.12
Cluster 5	-1,917.77	4,216.79	3,973.53	4,042.53	69	0.15
Cluster 6	-1,900.74	4,260.09	3,967.48	4,050.48	83	0.14
Cluster 7	-1,877.85	4,291.66	3,949.69	4,046.69	97	0.12
Cluster 8	-1,858.75	4,330.82	3,939.49	4,050.49	111	0.12
Cluster 9	-1,841.46	4,373.59	3,932.91	4,057.91	125	0.11
Cluster 10	-1,830.21	4,428.47	3,938.43	4,077.43	139	0.10

LL, log-likelihood ratio; BIC, Bayesian information criterion; AIC, Akaike information criterion; Npar, number of parameters; Class. Err, proportion of classification errors.

TABLE 2 Characteristics of four subgroups of homeless young adults based on the latent class variables

Variable	Cluster 1 (n = 114)	Cluster 2 (n = 60)	Cluster 3 (n = 42)	Cluster 4 (n = 35)	Total (N = 251)	df	χ^2/F	Group comparisons
Abuse (%)	40.4	61.7	0	45.7	39.4	3	40.38***	1, 2, 4 > 3 2 > 1
Victim of violence (%)	14.0	31.7	9.5	8.6	16.7	3	13.44**	2 > 1, 3, 4
Somatic symptoms (%)	46.5	98.3	38.1	5.7	51.8	3	86.25***	2 > 1, 3, 4 1, 3 > 4
Depressive symptoms (%)	60.5	98.3	2.4	0	51.4	3	134.12***	1 > 3, 4 2 > 1, 3, 4
Anxiety symptoms (%)	62.3	91.7	21.4	28.6	57.8	3	64.18***	2 > 1, 3, 4 1 > 3, 4
Resilience ^a (M, SD)	3.28 (0.34)	2.82 (0.47)	3.21 (0.28)	3.59 (0.23)	3.20 (0.43)	3;106.04	41.28***	1, 3, 4 > 2 4 > 1, 3
Social support ^a (M, SD)	5.73 (0.77)	4.90 (1.39)	5.98 (0.26)	6.14 (0.61)	5.63 (0.99)	3;103.82	15.26***	1, 3, 4 > 2
Family support ^a (M, SD)	3.62 (1.60)	3.58 (1.66)	5.46 (0.60)	4.09 (1.92)	3.99 (1.68)	3;99.73	48.67***	3 > 1, 2, 4
Perceived health status ^a (M, SD)	4.71 (0.86)	3.09 (0.92)	5.50 (0.62)	6.15 (0.38)	4.65 (1.28)	3;113.31	190.47***	4 > 1, 2, 3 3 > 1, 2 1 > 2

Between subgroup differences were significant at $p < .008$. Cluster 1 = at-risk subgroup; cluster 2 = high-risk and least protected subgroup; cluster 3 = low-risk subgroup; cluster 4 = higher functioning and protected subgroup.

^aVariances are not equal between groups, therefore a Welch correction is applied and a Games Howell procedure for the posthoc test.

*** $p < .001$, ** $p < .01$.

to the clusters one and two. In this cluster, the scores of satisfaction with family- and social support were relatively low.

3.3 | Differences in demographics, cognitive coping strategies and quality of life

No significant differences in gender and age existed between the subgroups (Table 3). With respect to the use of cognitive coping strategies, the *high-risk and least protected subgroup* differed the most compared to the other subgroups: these HYA significantly reported higher scores on rumination and catastrophising and lower scores on positive reappraisal, positive refocusing and putting into perspective. The *low-risk subgroup* and the *higher functioning and protected subgroup* showed higher scores in quality of life than the other two subgroups.

4 | DISCUSSION

This study provides evidence for the presence of four distinguishable subgroups in a Dutch sample of HYA based on risk- and protective factors for quality of life. As hypothesised, results of our study partly confirmed that subgroups of HYA with lower scores in risk factors, also showed higher scores in protective factors, the so-called adaptive cognitive coping strategies and quality of life. No differences were found in gender and age and in the use of substances across subgroups. According to our results and consistent with previous research, the subgroups can be placed on a continuum from the most vulnerable HYA, represented in the *high-risk and least protected subgroup* with high scores in all risk factors and low scores in the

protective factors to the *higher functioning and protected subgroup* with relatively low scores in the risk factors and high scores in the protective factors (Milburn et al., 2009). Moreover, the risky cluster found by Milburn et al. (2009) was to some extent similar to our *high-risk and least protected subgroup* showing high scores in former abuse, emotional distress and limited social support (Milburn et al., 2009).

4.1 | Subgroups

In general, subgroups in our sample that displayed higher scores in former abuse and victimisation also showed higher scores in psychological symptoms, which is in line with previous studies that investigated the relationship between these variables (Bender et al., 2015; Whitbeck et al., 2007). In addition, subgroups (particularly in the *high-risk and least protected subgroup*) that showed high scores in psychological symptoms, also used more maladaptive cognitive coping strategies (rumination and catastrophising) in combination with less adaptive cognitive coping strategies (positive refocusing, putting into perspective and positive reappraisal) in response to stress, conform previous findings (Garnefski, Boon, & Kraaij, 2003; Garnefski et al., 2001, 2002, 2009; Kraaij & Garnefski, 2012; Legerstee, Garnefski, Verhulst, & Utens, 2011). Interestingly, former abuse, victimisation and psychological symptoms in the *at-risk subgroup* and the *high-risk and least protected subgroup* were (extremely) high, but in the *at-risk subgroup*, HYA seem to be more protected by their high levels of resilience, social support, perceived health and the use of more adaptive cognitive coping strategies and less maladaptive coping strategies. Although the use of cognitive coping strategies did not differentiate across all the subgroups, the use of combined forms

TABLE 3 Significant differences between the subgroups in (demographic) characteristics, QoL and cognitive coping strategies

Variable	Cluster 1 (n = 114)	Cluster 2 (n = 60)	Cluster 3 (n = 42)	Cluster 4 (n = 35)	Total (N = 251)	df/df2	χ^2/F	Group comparisons
Women (%)	30.7	45.0	26.2	22.9	32.3	3	6.71	
Age ^a M (SD)	20.18 (1.63)	20.45 (1.92)	20.31 (1.81)	19.71 (1.53)	20.20 (1.73)	3	1.42	
QoL ^a M (SD)	4.58 (1.09)	3.45 (1.04)	5.31 (0.91)	5.31 (1.06)	4.54 (1.25)	3	35.74***	1, 3, 4 > 2 3, 4 > 1
Self-blame ^a (M, SD)	5.46 (2.17)	5.38 (2.46)	4.88 (2.21)	4.80 (2.52)	5.25 (2.30)	3	1.18	
Other-blame ^a (M, SD)	3.98 (1.95)	4.75 (2.41)	3.60 (1.77)	4.06 (2.18)	4.11 (2.10)	3	2.91*	
Rumination ^a (M, SD)	5.76 (2.26)	7.34 (1.90)	4.69 (2.12)	4.46 (2.06)	5.77 (2.35)	3	18.60***	2 > 1, 3, 4
Catastrophising (M, SD)	4.82 (2.25)	6.48 (2.37)	4.21 (2.11)	3.91 (1.72)	4.99 (2.36)	3/102.634	14.05***	2 > 1, 3, 4
Positive reappraisal ^a (M, SD)	7.88 (1.95)	6.80 (2.09)	7.26 (1.95)	7.49 (2.11)	7.46 (2.04)	3	3.94**	1 > 2
Refocus on planning ^a (M, SD)	6.44 (2.27)	6.08 (2.35)	5.93 (2.22)	6.20 (2.52)	6.24 (2.31)	3	0.62	
Positive refocusing ^a (M, SD)	5.73 (2.28)	4.78 (2.22)	5.38 (2.26)	6.89 (2.29)	5.60 (2.34)	3	6.62***	4 > 2
Putting into perspec- tive ^a (M, SD)	6.09 (2.02)	4.73 (1.84)	6.31 (2.35)	5.77 (2.12)	5.76 (2.13)	3	7.02***	1, 3 > 2
Acceptance ^a (M, SD)	6.73 (2.08)	6.64 (2.28)	6.29 (2.14)	5.94 (2.39)	6.52 (2.19)	3	1.39	

Between subgroup differences were significant at $p < .008$. Cluster 1 = at-risk subgroup; cluster 2 = high-risk and least protected subgroup; cluster 3 = low-risk subgroup; cluster 4 = higher functioning and protected subgroup.

^aVariances are equal between groups, a Hochberg procedure for the posthoc test was applied.

*** $p < .001$, ** $p < .01$, * $p < .05$.

of adaptive coping (e.g. in the *at-risk subgroup*) seemed to be associated with better psychological adjustment in contrast to the use of combined forms of maladaptive cognitive coping (e.g. in *high-risk and least protected subgroup*), in line with previous studies (Brown, Begun, Bender, Ferguson, & Thompson, 2015; Doron et al., 2013).

HYA in the *low-risk subgroup* did not report high scores in the risk factors and were the most satisfied with their family support. However, relatively many HYA in this subgroup reported somatic and anxiety symptoms. Other risk factors inherent to their homeless situation might explain the prevalence of these psychological symptoms, such as limited financial resources, substance use and the duration of homelessness (Cleverley & Kidd, 2011; Edidin et al., 2012).

Young adults in the *low-risk subgroup* were the most satisfied with their family support and HYA in the *high-risk and least protected subgroup* were the least satisfied with their social support. Differences in homeless living conditions may play a role here, as street-involved HYA are more likely to experience less support (Barman-Adhikari, Bowen, Bender, Brown, & Rice, 2016) and are at increased risk for negative health outcomes than HYA who are (marginally) housed (Barman-Adhikari et al., 2016; Rachlis, Wood, Zhang, Montaner, and Kerr, 2009). It is not known, however, whether HYA in the *high-risk and least protected subgroup* were more street-involved or had experienced longer periods of homelessness than HYA in other subgroups before entering the shelter facility.

The *higher functioning and protected subgroup* showed high scores on resilience, social support, perceived health, adaptive cognitive coping (positive refocusing) and quality of life compared to other subgroups. Although differences in the nature and severity of

former negative experiences might exist across the subgroups, this subgroup seems to be better able to deal adequately with negative experiences and to recognise and benefit from support in their environment to regain control over their lives and thereby preserving their health and well-being (Kidd & Shahar, 2008).

Our study seems to corroborate that not only a single protective factor is critical but that the accumulation of protective factors is important in preserving quality of life (Bonanno, Westphal, & Mancini, 2011; Werner & Smith, 1992). This is in agreement with the theories of resilience that suggest that resilient people have certain strengths, skills and abilities to benefit from various protective factors that help them to overcome adverse life situations (Bender, Thompson, McManus, Lantry, & Flynn, 2007; Lindsey et al., 2000; Thompson et al., 2016; Zolkoski & Bullock, 2012). Resilience can be understood as a dynamic process which can be developed at any point in the life-cycle (Werner & Smith, 1992). To a certain extent, becoming more resilient by developing personal strengths, new competencies and coping mechanisms can create a cycling pattern of change within the self as well as in relationships with others (Williams, Lindsey, Kurtz, & Jarvis, 2001). As such, resilience seems to be a self-reinforcing process which subsequently may lead to a higher quality of life (Williams et al., 2001).

4.2 | Strengths and limitations

In our study, four meaningful, empirically based, mutually exclusive subgroups were derived from the LCA, but several limitations

need to be considered when interpreting the results. First limitation is, although the participating ten shelter facilities were geographically distributed across the Netherlands and every effort was done to recruit a random sample of HYA admitted to shelter facilities, it cannot be assumed that our sample is fully representative due to potential selection and non-response bias. However, the relatively long timeframe of data collection (approximately 16 months) allowed us to achieve a substantially large sample size and to account for potential time-varying (seasonal) variation in risk and protective factors in HYA that otherwise might have affected the cluster solution (Jia & Lubetkin, 2009). Second, cross-sectional data limit the possibility to verify any causal relationships between the quality of life indicators and only give an impression of the situation at one-point in time disregarding potential changes in risk and protective factors over time. Follow-up measurements would help to validate the identified subgroups as this allows for further characterisation of the subgroups by providing insight into the changing pattern of risk and protective factors. Third, although we used standardised, valid and reliable measures, the possibility of bias associated with self-report measures cannot be ruled out. Future studies should replicate our analysis with larger samples, also drawn from HYA populations using low-threshold services as day- and night shelters, to investigate whether our subgroups can be replicated.

4.3 | Implications

Our findings of four subgroups of HYA provide important clues for the development of tailored and targeted interventions. Social workers need to be attentive to the pattern of risk- and protective factors in each individual to determine, in close connection and collaboration with HYA, which risk factors are prominent and need to be targeted and which protective factors need to be enhanced to improve their quality of life. A thorough risk- and strength assessment helps to identify which intervention is the most adequate and effective for each individual. Regular monitoring of the changing life situation and life challenges of HYA in the shelter facility, upon admission to discharge, is necessary because changes in society and in service provision will change profiles of HYA seeking help (Bosscher, 2014; Movisie/SZN, 2016; Wolf, 2014). Moreover, the balance between risk- and protective factors within each individual is dynamic and changes over time with the stages of the life-cycle and context (Shonkoff & Meisels, 2000).

Our findings highlight several key issues for social work practice. Young adults in the *at-risk subgroup* may be in need of more intensive services aiming at their previous negative experiences, psychological symptoms and perceived health. Strengthening or renewing family- and social bonds should be an integral part of an intervention for this subgroup (also for the *high-risk and least protected subgroup*). Positive social networks are important sources for material and emotional support, they increase the feelings of belonging, enhance social integration and may buffer against participation in risky behaviours, such as drug use and sex-related risk behaviour (de la Haye et al.,

2012; Johnson, Whitbeck, & Hoyt, 2005; Rice, Milburn, & Monro, 2011). Unfortunately, there are few social network interventions available for HYA, but some studies showed improvements in social connectedness and social skills, decreased loneliness and hopelessness, for HYA who received such interventions (McCay et al., 2011; Stewart, Reutter, Letourneau, & Makwarimba, 2009). The *high-risk and least protected subgroup* need the most comprehensive services including physical and mental healthcare. An integrated approach to address their needs seems to be essential. Shelter facilities do not generally provide specialised care that provides treatment of psychological symptoms. These young adults may benefit the most from a protective environment with extensive treatment and support. Cognitive behavioural therapy may be indicated in order to help them change their use of maladaptive coping strategies into more adaptive coping strategies, thereby improving their health and quality of life (Wilkinson & Goodyer, 2008).

Young adults in the *low-risk subgroup* may benefit the most from short-term interventions aiming at their somatic and anxiety complaints and further enhancement of resilience and their use of adaptive coping strategies. The underlying factors of their somatic symptoms need to be identified as they can be both physical and psychological. Although HYA in the *higher functioning and protected subgroup* were doing relatively well, social workers could support them by maintaining and fostering their protective resources.

In conclusion, social workers need to consider whether the provided support and care is appropriate and necessary for all HYA, whether they are capable of providing the needed support themselves or whether it is necessary to refer these young adults to more specialised services and treatment or other (housing) facilities. Our findings may help social workers and shelter facilities to become more responsive and effective in addressing the specific needs of HYA to maintain or improve their quality of life.

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CONFLICT OF INTEREST

The authors declare that they have no conflicts of interest.

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